A Hawk Moths fauna of southern Maranhão state, Brazil, with description of a new species of *Orecta* Rothschild & Jordan, 1903 and the female of *Nyceryx mielkei* Haxaire, 2009 (Lepidoptera: Sphingidae)

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Abstract: A list of 48 Sphingidae species (Lepidoptera) from southern Maranhão, Brazil, is presented placed in three subfamilies: Sphinginae (8), Smerinthinae (3), Macroglossinae (37). The female of *Nyceryx mielkei* Haxaire, 2009 is described and figured for the first time. *Orecta* ***comus*** **sp. n.** is described and compared to the similar species, *O. lycidas* (Boisduval, [1875]), differing mainly in the width of the marginal band on the forewing underside and male genitalia. The male holotype is deposited in the Col. Padre Jesus S. Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Paraná, Brazil.

Key words: fauna survey, taxonomy, Sphingidae, Neotropical.

Zur Schwärmerfauna aus dem südlichen Bundesstaat Maranhão, Brasilien, mit Beschreibung einer neuen *Orecta* Rothschild & Jordan, 1903 und des Weibchens von *Nyceryx mielkei* Haxaire, 2009 (Lepidoptera, Sphingidae)

Zusammenfassung: Eine Artenliste der Sphingidae (Lepidoptera) aus dem südlichen Maranhão, Brasilien, wird vorgestellt. 48 Arten aus drei Unterfamilien werden aufgeführt: Sphinginae (8), Smerinthinae (3), Macroglossinae (37). Das Weibchen von *Nyceryx mielkei* Haxaire 2009 wird erstmals beschrieben und abgebildet. *Orecta* ***comus*** **sp. n.** wird beschrieben und verglichen mit der ähnlichen Art *O. lycidas* (Boisduval, [1875]), die sich vor allem durch die Streifenbreite auf der Ventralseite der Vorderflügel und in den männlichen Genitalien unterscheidet. Der männliche Holotyp wird in der Sammlung Padre Jesus S. Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Paraná, Brasilien, hinterlegt.

Introduction

Due to their importance as pollinators and pollen vectors, the Sphingidae faunas of various regions of Brazil have been surveyed by several authors: north (Motta et al. 1991, 1998, Motta & Andreazze 2001, Motta & Xavier-Filho 2005), northeast (Duarte jr. et al. 2001, Darrault & Schlindwein 2002, Gusmão et al. 2003, Gusmão & Creão-Duarte 2004a, b, Duarte jr. & Schlindwein 2005a, b, 2008, Cruz-Neto et al. 2011), southeast (Oiticica Filho 1942, Duarte et al. 2008, Martin et al. 2011) and south (Laroca & C. Mielke, 1975, Laroca et al. 1989, Marinoni et al. 1999, Corseuil et al. 2001, Specht et al. 2008, Siewert & Silva 2010). Kitching & Cadiou (2000) highlighted the importance of species surveys as contributions to the local biodiversity assessments and for elucidating their biogeographical relationships.

Despite the Cerrado (Brazilian savanna) covering about 25 % of the area of Brazil, no species list has been published for this biome, the majority of the work having been carried out in the Atlantic rainforest, which ranges from the NE to S regions, the Amazon and a little in the Caatinga, an exclusive NE Brazilian biome. Southern Maranhão (the area treated in the present study), one of the states that belongs to Northeast region and located in the Cerrado area, has been revealed to be an interesting area of endemism with several species of Lepidoptera (Saturniidae, Sphingidae, Nymphalidae) described that are unknown from other localities (Becker 2001, Lemaire & C. Mielke 2001, Haxaire 2009, Moreira & C. Mielke 2010). Ferro et al. (2010) have already highlighted the lack of records of Arctiinae (Lepidoptera, Erebidae) in this biome, suggesting little collecting effort, a reason why new species of otherwise well-known groups have been discovered.

The main purpose of the present study, focused on the Sphingidae fauna of two localities where collecting has been carried out for over 10 years (southern Serra do Penitente, Balsas) and 2 years (Retiro, Feira Nova do Maranhão), is to compare their biodiversity with previously published data. Also, as a result of this inventory, a new species of *Orecta* Rothschild & Jordan, 1903 and the female of *Nyceryx mielkei* Haxaire, 2009 are described and figured.

Abbreviations

BC	Specimens with mtDNA barcode (and ID number of Bold or GenBank).
BMNH	The Natural History Museum, London, U. K.
CJH	Coll. Jean Haxaire, Laplume, France.
COM	Coll. Olaf H. H. Mielke, Curitiba, Paraná, Brazil.
DZUP (DZ)	Coll. Padre Jesus S. Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Paraná, Brazil.
FW	Forewing.
GP	Genitalia preparation number.
HT	Holotype.
HW	Hindwing.
MZSP	Museu de Zoologia, Universidade de São Paulo, São Paulo, São Paulo, Brazil.
PT	Paratype.

Material and methods

The two collecting localities in Maranhão, Brazil (Fig. 1) are as follows:

Balsas (BLS) Co.: Serra do Penitente, Nova Holanda Farm, 8°47′30″ S, 46°21′58″ W, 450 m a.s.l. The pri-

mary vegetation is light to medium cerrado with gallery forest. There are two well-defined seasons, wet and dry, the former lasting from mid-October until early April, with an estimated average temperature of 25° C and rainfall of 1300 mm. According to Köppen's (1948) climate classification, it is Aw (tropical wet and dry or savanna climate with an extended dry season during winter). The site is in the Balsas River Basin, a tributary of the Parnaíba River.

Feira Nova do Maranhão (FNM) Co.: Retiro, 7°0′31″ S, 46°26′41″ W, 480 m a.s.l. The general data is as the previous locality. The site is in the the Farinha River Basin, a tributary of the Tocantins River, itself a tributary of the Amazon River (Amazon River Basin), and lies about 200 km (straight line) N from the previous locality.

Collecting was carried out mostly during the wet season using the standard method for collecting at light at night with a 250 W mercury-vapor light source and a white sheet.

All specimens were identified by comparison with holotypes, specimens in collections and published revisions. We would highlight the atomization by Eitschberger (2006) of the genus *Cocytius* Hübner, 1819 into four separate genera, in contrast to its unity and monophyly as shown by Kitching (2002), followed by treating the continental populations of *Cocytius duponchel* (Poey, 1832) as *Amphonyx rivularis* Butler, 1875.

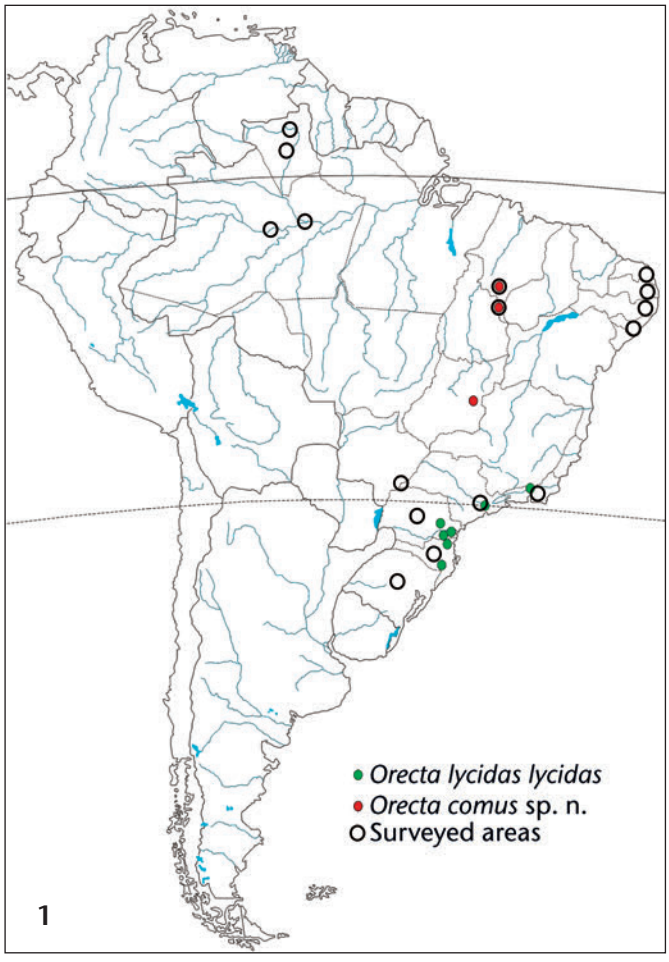


Fig. 1 (map): Areas within Brazil surveyed for Sphingidae and the localities of *Orecta lycidas lycidas* and *Orecta comus* sp. n.

The inventory is presented in Table 1. Names are listed in alphabetical order within their respective subfamilies and tribes. In addition to the locality records, information is given about each species' frequency at light traps based on the number of individuals observed in the field. Also, a depository (see abbreviations) is mentioned for at least one voucher specimen.

The Bold ID is given for all mtDNA barcoded specimens of the examined material of *Orecta*. Whenever available, a GenBank code is shown with priority over Bold codes. The depository of each specimen is given followed by the abbreviation (see list above) followed, when available, by the voucher number.

Description of the female of *Nyceryx mielkei*

Examined specimen (1 ♀): Brazil, **Maranhão**: Feira Nova do Maranhão, Retiro, 7°0′31″ S, 46°26′41″ W, 480 m, 15.–17. xi. 2012, C. Mielke leg. (DZ 15.538). – Figs. 2a, 2b.

♀. FW length: 20 mm; wingspan 46 mm. Wing pattern as in the ♂ (see Haxaire 2009: 12), FW apex rounded rather than pointed as in the ♂. The distal central projection of the abdomen is absent, as in the ♀♀ of the other species of the group. As the species is clearly defined, the genitalia have not been prepared to preserve the unique specimen.

Description of the new species

Orecta comus Haxaire & C. Mielke, sp. n.

Figs. 3a, 3b, 4a, 4b, 5a, 5b, 6a, 6b, 9, 10.

Holotype ♂ with the following labels: /Holotypus, *Orecta comus* Haxaire & C. Mielke det. 2013/ Brasil – MA [Maranhão], Feira Nova do Maranhão, Retiro, 480 m, 24.–31. xii. 2011, 7°0′31″ S, 46°26′41″ W, C. Mielke leg./ DZ[UP] 15.538/ génitalia n° 513, Sphingidae, Jean Haxaire/. – Figs. 3a, 3b.

Paratypes (in total 27 ♂♂, 2 ♀♀): all Brazil: **Maranhão:** 2 ♂♂, Balsas, Serra do Penitente, 500 m, 22. x. 2001, C. Mielke leg. (COM 54.264 [BC-JX216481], 54.306 [BC-JX216482]). 1 ♀, Balsas, Serra do Penitente, 480 m, 1.–7. xi. 2009, C. Mielke leg. (CJH [BC-Hax5021]). 20 ♂♂, same data as the holotype (CJH). 2 ♂♂, 1 ♀, same locality as the holotype, 10. xii. 2011 (CJH). 2 ♂♂, same data as the holotype (MZSP; BMNH). – **Goiás:** 1 ♂, Goiás, Vianópolis, Ponte Punda, 7. x. 1966, N. Tangerini leg. (DZ 11.642).

Etymology. It is named for another of John Milton's poems, although Boisduval did not give evidence that the species-group name *lycidas* was after Milton's poem.

♂ (Figs. 3a, 3b, 5a, 5b, 6a, 6b). FW length: 34–41 mm; wingspan 75–85 mm. Head olive-brown or pale olive-green dorsally, labial palpi dark yellow. Thorax as the head dorsally with two latero-posterior dark olive-brownish, finely white-edged tegulae. First abdominal segment of the same colour as the tegulae; the remaining segments dorsally of the same colour as the head, lightly suffused with white scales. Thorax and abdomen olive-yellowish ventrally. FW elongate, apex pointed, pronounced and slightly falcate; outer margin concave,

inner margin convex proximally and concave distally with an acute tornus. FW dorsal ground colour olive-brownish or pale olive-brownish. Ante- and postmedial lines sometimes distinct. Basal area marked by three dark olive-brownish spots with fine white edging: the basal is a dot; the larger subbasal spot is rectangular, sometimes slightly compressed laterally, rounded anteriorly, starting just below the discal cell, ending on the inner margin; and an elongated or rounded tiny dot, dis tal to the former, but sometimes absent (two thirds of the examined specimens). Median area slightly darker distally, slightly suffused with white scales; stigma diffuse, dark brown. Postmedian area clearly suffused by white scales with two dark olive-brownish spots: a rectangular subapical patch in the costal margin, enlarged at the base, ending at R_4; and an irregular patch, marked on the inner margin by sinusoidal white lines. Marginal area slightly darker, anteriorly lighter. HW elongated, apex acute; costal margin four fifths slightly convex at base, downward curved to the apex; outer margin straight, slightly dentate proximately, then concave to a produced anal angle; anal margin straight, then concave in its distal third. Ground colour reddish-orange, with a triangular grayish anal area bearing two light cream dots, distally larger and submarginally some dark green-olivish dots lined, linked, and edged with white, followed by a light olive margin. Ventrally, FW with basomedian area dark yellow, yellowish-orange posteriorly; antemedial line absent, postmedial sometimes distinct; stigma marked; postmedian area light or pale olive, darker apically, and with a brown spot at inner margin, as on the dorsal side. Marginal band light gray, concave, and narrow. HW light olive-brownish suffused with scattered white scales, postmedial line slightly marked followed by two more parallel lines distally; anal angle with a grayish spot submarginally which bears two light-gray spots and a dark reddish spot marginally.

♂ **genitalia** (Figs. 9, 10). Uncus simple, finger-like, slightly curved downwards. Gnathos a transverse plate, slightly bilobed. Valve simple, rounded apically and not elongated (Fig. 10); harpe triangular. Saccus triangular, slightly projected anteriorly.

♀ (Figs. 4a, 4b). FW length: 49–51 mm; wingspan 103–107 mm. Wing patterns as in the ♂; FW broader, apex less pointed, and the convex outer margin on both wings.

Diagnosis

Orecta comus sp. n. is quite similar to *Orecta lycidas lycidas* (Boisduval, [1875]) (Figs. 7a, 7b, 8a, 8b), including wingspan, with 75–85 mm for the former (average ca. 81 mm) and 70–84 mm (average ca. 80 mm) for the lat ter, but can be differentiated by the following characters: narrower FW and apex more pronounced; paler and less contrasting markings on the FW; basal tiny dot much reduced or absent in the majority of examined specimens (in *O. l. lycidas,* it is always present and conspicuous); white scales on the abdomen scarcely observed (in *O. l. lycidas,* they are frequent); narrower marginal band on the FW underside; and finally, the harpe is triangular or subtriangular and uncus slightly more downcurved (in *O. l. lycidas*, the harpe is hook or spine-like, Figs. 11, 12).

Remarks

O. comus sp. n. seems to be represented by two distinct phenotypes based on the FW, head and thorax ground colour, with no intermediate variation known. The pale olive-green variation is based on the only 2 ♂♂ collected at Balsas Co., while the olive-brown form was only collected at Feira Nova do Maranhão Co. The barcode region of the mitochondrial Cytochrome-c Oxydase I gene (COI) was amplified with the primer set Lep-F1/Lep-R1 targeting a 658 bp fragment (Hebert et al. 2004) for both populations, revealing an exact similarity of both populations.

Ethology and geographical distribution

O. comus sp. n. is known from Maranhão (Fig. 1) and Goiás, NE and Central Brazil, respectively. Both sexes are attracted to light just after dusk for a few minutes, as they do in the related species, *O. lycidas lycidas*. In its type locality, two light traps were run simultaneously, 200 m from each other, but only the one placed at the border of the plateau overlooking a gallery forest attracted the species. ♂♂ were also observed flying towards the light trap close to the ground through the vegetation.

Examined material of *O. lycidas lycidas*. In total 31 ♂♂, 8 ♀♀, all Brazil, **Rio de Janeiro:** 2 ♂♂, 1 ♀, Rio de Janeiro, Petrópolis, Par que São Vicente, 920 m, 3.–8. i. 1962, 23. i. 1963, Gagarin leg. (DZ 11.636, 11.637, 11.639). 1 ♂, Rio de Janeiro, Petrópolis, 10. xi. 1963, Gagarin leg. (DZ 11.638). – **São Paulo:** 1 ♂, São Paulo, Salesópolis, Boracéia, 800 m, 5. ix. 1941 (DZ 11.640). – **Paraná:** 1 ♂, São José dos Pinhais, Estr. Castelhanos, 700 m, 22. ix. 1997, C. Mielke leg. (COM 45.677). 1 ♀, Campo do Tenente, 900 m, 24. ii. 1968, O. Mielke & Moure leg. (DZ 11.635). – **Santa Catarina:** 22 ♂♂, 5 ♀♀, São Bento do Sul, Rio Vermelho, 700–800 m (CJH). 2 ♂♂, São Bento do Sul, Rio Vermelho, 850 m, 24. viii. 1973, 12. i. 1974, Rank leg. (DZ 11.631, 11.633). 1 ♀, São Bento do Sul, Rio Vermelho, i. 1963 (DZ 11.632). 1 ♂, Corupá, 21. i. 1966, O. Mielke leg. (DZ 11.641). 1 ♂, Urubici, Serra do Panelão, 1250 m (CJH).

Sphingidae survey

Of the 210 Sphingidae species listed for Brazil (Duarte et al. 2008), 48 species (about 23%) are here recorded for southern Maranhão (Table 1) with the following species diversity by subfamily: Sphinginae (8), Smerinthinae (3), Macroglossinae (37).

In spite of collecting at dusk in flowers was not carried out, few species were accidentally attracted to lights, as *Pachygonidia caliginosa* (Boisduval, 1870), *Aleuron* spp., and *Unzela japix japix* (Cramer, 1776), otherwise more taxa could be likely registered. *P. caliginosa* (collected at dawn), *Perigonia leucopus* Rothschild & Jordan, 1910 (collected at dusk), and *Phryxus caicus* Hübner, [1819] are represented by unique specimens. *Eumorpha adamsi* (Rothschild & Jordan, 1903), *Isognathus allamandae*

Table 1. Richness comparison among Sphingidae surveying throughout Brazil separated by biome or statewide lists. — Numbers: **1:** Motta et al. (1991): Maracá island and Pacaraima mountain (Roraima state). **2:** Motta et al. (1998): Itacoatiara Co. (Amazonas state). **3:** Motta & Andreazze (2001): Novo Airão/Barcelos Co. (Amazonas state). **4:** Motta & Xavier-Filho (2005): Beruri Co. (Amazonas state). **5:** Duarte jr. & Schlindwein (2005a): Cabo Santo Agostinho/Jaboatão dos Guararapes/Moreno Co. (Pernambuco state). **6:** Duarte jr. & Schlindwein (2008): Jaqueira Co. (Pernambuco state). **7:** Duarte et al. (2008): Salesópolis Co. (São Paulo state). **8:** Martin et al. (2011): Cachoeiras de Macacu/Guapimirim/Nova Friburgo/Petrópolis/Teresópolis Co. (Rio de Janeiro state). **9:** Cruz-Neto et al. (2011): São José da Lage (Alagoas state). **10:** Oiticica Filho (1942): Rosana Co. (São Paulo state). **11:** Duarte jr. et al. (2001): Serra Negra do Norte Co. (Rio Grande do Norte state). **12:** Gusmão et al. (2003): Campina Grande (Paraíba state). **13:** Gusmão & Creão-Duarte (2004a): Areia/Campina Grande Co. (Paraíba state). **14:** Duarte jr. & Schlindwein (2005b): Serra Negra do Norte (Rio Grande do Norte state). **15:** Darrault & Schlindwein (2002): Mamanguape Co. (Paraíba state). **16:** Marinoni et al. (1999): Paraná state. **17:** Siewert & Silva (2010): Santa Catarina state. **18:** Specht et al. (2008): Rio Grande do Sul state. — * Frequency: VC (very common), C (common), F (frequent), S (scarce), VS (very scarce).

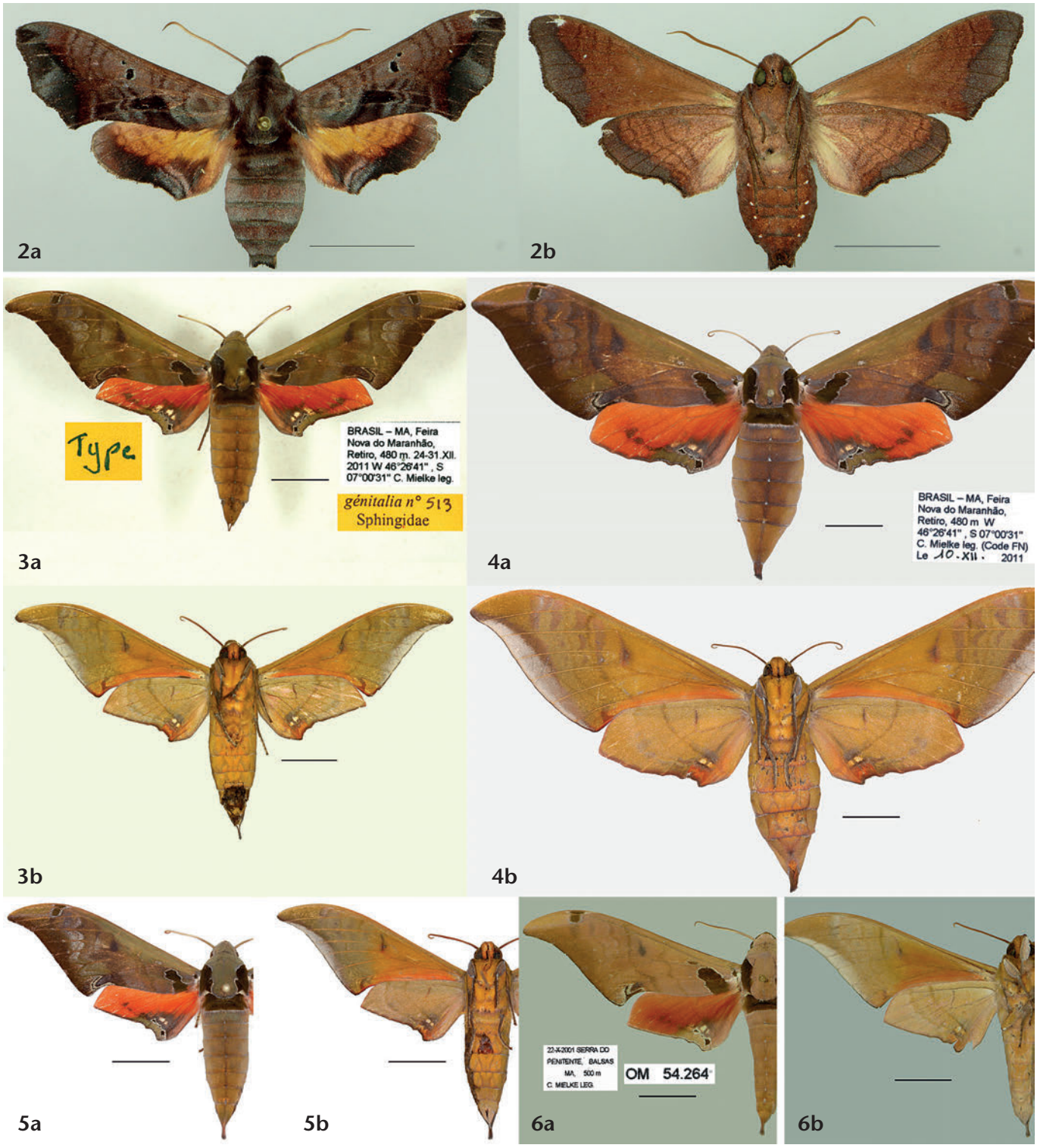
Family, subfamily, tribe Species	frequency*	BLS	FNM	depository/ voucher	Amazon rainforest				Atlantic rainforest						Caatinga				Tabuleiro	Statewide		
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	PR 16	SC 17	RS 18
Sphingidae, Sphinginae, Sphingini																						
Agrius cingulata (Fabricius, 1775)	F	×	×	CJH	×	×		×		×	×	×			×	×	×	×	×	×		×
Amphonyx rivularis Butler, 1875	VC	×	×	CJH	×	×	×	×			×	×								×	×	×
Manduca florestan (Cramer, 1782)	C	×	×	CJH	×		×			×	×	×	×							×	×	×
Manduca lefeburii (Guérin-Méneville, 1844)	F	×	×	CJH		×	×	×				×									×	×
Manduca sexta paphus (Cramer, 1779)	F	×	×	CJH	×	×	×	×		×	×	×				×	×		×	×		×
Manduca manducoides (Rothschild, 1894)	S	×	×	BMNH																		
Neococytius cluentius (Cramer, 1775)	F	×	×	CJH	×	×	×	×			×	×								×	×	×
Neogene dynaeus (Hübner, [1825])	C	×	×	BMNH					×	×		×	×			×	×	×	×			
Sphingidae, Smerinthinae, Ambulycini																						
Protambulyx eurycles (Herrich-Schäffer, [1855])	C	×	×	BMNH	×	×	×	×	×		×	×										
Protambulyx strigilis (Linnaeus, 1771)	C	×	×	CJH	×	×	×	×	×	×	×	×		×	×	×	×	×	×	×	×	×
Orecta ***comus sp. n.***	S	×	×	DZUP																		
Sphingidae, Macroglossinae, Dilophonotini																						
Aellopos titan titan (Cramer, 1777)	C	×	×	CJH							×	×		×					×			×
Aleuron chloroptera (Perty, 1833)	VS	×		CJH	×	×						×										×
Aleuron iphis (Walker, 1856)	VS		×	CJH	×					×		×										
Callionima grisescens (Rothschild, 1894)	S	×	×	CJH						×		×			×	×	×	×	×			
Callionima guiarti (Debauche, 1934)	C	×	×	CJH																		
Enyo lugubris lugubris (Linnaeus, 1771)	VC	×	×	CJH	×	×	×	×	×	×	×	×			×	×	×	×		×	×	×
Enyo ocypete (Linnaeus, 1758)	VC	×	×	CJH	×	×	×	×	×	×	×	×		×					×	×	×	×
Erinnyis alope alope (Drury, 1770)	C	×	×	CJH	×	×	×	×	×	×	×	×				×	×	×		×	×	×
Erinnyis ello ello (Linnaeus, 1758)	VC	×	×	CJH	×	×	×	×	×	×	×	×		×	×	×	×	×	×	×	×	×
Erinnyis obscura obscura (Fabricius, 1775)	C	×	×	CJH	×	×	×	×		×	×	×			×			×		×	×	×
Eupyrrhoglossum sagra (Poey, 1832)	S	×		CJH	×		×					×										
Hemeroplanes triptolemus (Cramer, 1779)	VS	×		CJH			×		×	×		×										
Isognathus allamandae Clark, 1920	VS	×	×	COM	×				×	×		×			×							
Isognathus caricae caricae (Linnaeus, 1758)	C	×	×	CJH	×	×				×	×	×							×			×
Isognathus menechus (Boisduval, [1875])	C	×	×	CJH			×			×						×	×		×			

Family, subfamily, tribe Species	frequency*	BLS	FNM	depository/ voucher	Amazon rainforest				Atlantic rainforest						Caatinga				Tabuleiro	Statewide		
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	PR 16	SC 17	RS 18
Madoryx bubastus bubastus (Cramer, 1777)	S	×	×	CJH	×			×				×										×
Madoryx plutonius plutonius (Hübner, [1819])	S	×	×	CJH			×	×		×	×	×	×								×	×
Nyceryx coffaeae (Walker, 1856)	S	×		BMNH			×				×	×										
Nyceryx mielkei Haxaire, 2009	S	×	×	DZUP																		
Pachygonidia caliginosa (Boisduval, 1870)	VS	×		CJH									×									
Pachylia ficus (Linnaeus, 1758)	F	×	×	CJH	×	×	×	×		×	×	×							×	×	×	×
Pachylioides resumens (Walker, 1856)	F	×	×	CJH	×	×	×	×		×	×	×		×						×	×	×
Perigonia leucopus Rothschild & Jordan, 1910	VS	×		BMNH																		
Perigonia lusca lusca Fabricius, 1777	C	×	×	DZUP	×		×	×				×					×					
Perigonia pallida Rothschild & Jordan, 1903	C	×	×	DZUP			×					×				×	×		×			
Phryxus caicus (Hübner, [1819])	VS	×		CJH	×	×		×				×										×
Pseudosphinx tetrio (Linnaeus, 1771)	VC	×	×	CJH	×	×	×	×	×	×	×	×					×	×	×		×	×
Unzela japix japix (Cramer, 1776)	VS	×		BMNH	×		×					×									×	
Sphingidae, Macroglossinae, Philampelini																						
Eumorpha adamsi (Rothschild & Jordan, 1903)	F	×	×	CJH																		
Eumorpha satellitia excessus (Gehlen, 1926)	F	×	×	CJH	×		×							×							×	×
Sphingidae, Macroglossinae, Macroglossinii																						
Xylophanes anubus (Cramer, 1777)	S		×	CJH			×			×		×	×							×		×
Xylophanes chiron nechus (Cramer, 1777)	S	×	×	CJH	×	×	×	×		×	×	×		×						×	×	×
Xylophanes pistacina (Boisduval, [1875])	S	×		BMNH	×						×	×										
Xylophanes pluto (Fabricius, 1777)	S	×	×	CJH	×					×	×	×				×	×			×	×	
Xylophanes porcus continentalis Rothschild & Jordan, 1903	S		×	CJH							×	×								×	×	×
Xylophanes tersa tersa (Linnaeus, 1771)	F	×	×	CJH	×	×	×		×	×	×	×			×		×	×	×	×	×	×
Xylophanes tyndarus (Boisduval, [1875])	S	×	×	BMNH								×								×	×	×
Total of species surveyed	48	45	39		60	61	79	42	23	50	75	114	14	17	14	14	19	20	24	55	51	84
Total of species shared					29	20	27	20	11	24	24	39	5	7	8	11	14	10	14	19	21	27
% shared					48%	33%	34%	48%	48%	48%	32%	34%	36%	41%	57%	79%	74%	50%	58%	35%	41%	32%
% average/biome or state					41%				40%						65%				58%	35%	41%	32%

Clark, 1920, *Hemeroplanes triptolemus* (Cramer, 1779), *Madoryx bubastus bubastus* (Cramer, 1777), *Manduca manducoides* (Rothschild, 1894), *Callionima grisescens* (Rothschild, 1894), *Nyceryx coffaeae* (Walker, 1856), *N. mielkei*, *Orecta comus* sp. n., *Xylophanes pluto* (Fabricius, 1777), *X. porcus continentalis* Rothschild & Jordan, 1903, *X. tyndarus* (Boisduval, 1875) were only recorded at the beginning of the wet season.

Discussion

Of the two localities, BLS shows higher diversity (45 species, compared to 39 in FNM), certainly due to greater collecting effort and mainly due to the attraction of species rarely seen at light traps, as mentioned above. Otherwise, diversity would be around 38 species for both sites. *N. coffaeae*, *Xylophanes anubus* (Cramer, 1777), *X. pistacina* (Boisduval, [1875]), and *X. porcus conti-*



nentalis, despite their wide distributions, were unexpectedly registered at only one of the localities. In addition, despite being located in the Amazon Basin, and considering its supposed higher diversity, only *Aleuron iphis* (Walker, 1856), *X. anubus* and *X. porcus continentalis* were recorded exclusively at FNM.

The diversity found in the present study shares an average of 40% with those surveys carried out in the Atlantic rainforest, rising to 48% if the S–SE part of this biome is excluded. Considering southern Brazilian lists, this average decreases to 36%. The Caatinga, with 65% of shared species, has the closest diversity with the present study area. Approximately, the same proportion as the NE Atlantic rainforest was found for the Amazon fauna (about 40%).

Thus, the Sphingidae fauna surveyed in southern Maranhão seems to be, in spite being in the Cerrado, closer to the Caatinga fauna than to any other biome, sharing from 50 to 79% of the species. It makes sense due to its geographical proximity. *Perigonia leucopus*, *Eumorpha adamsi*, *Manduca manducoides, O. comus* sp. n. and *Nyceryx mielkei* appear to be endemic to the Cerrado, the last being endemic to the area treated in the present study.

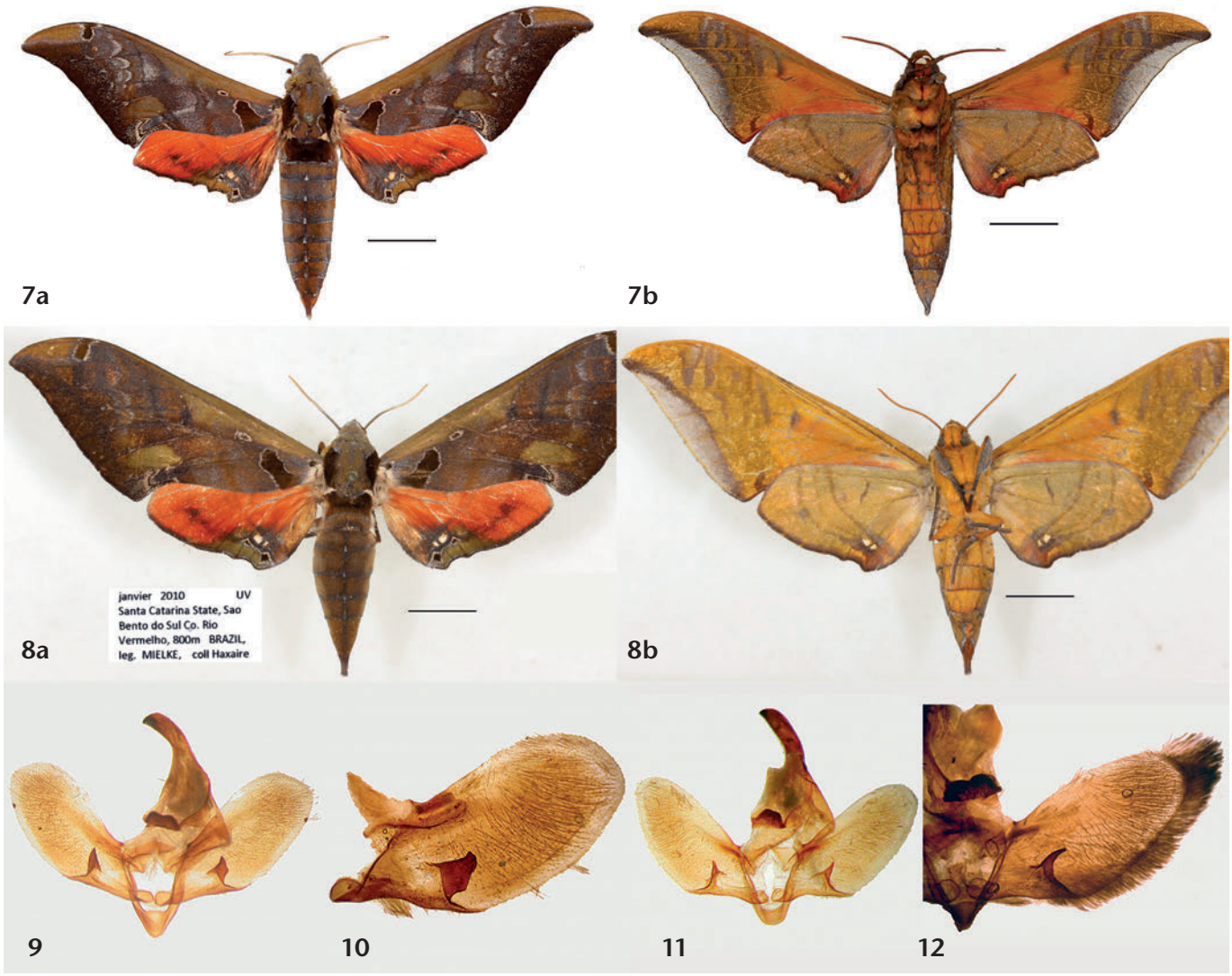


Fig. 2: *Nyceryx mielkei*. ♀ dorsal (**2a**), ventral (**2b**). — Scale bars: 1 cm (scale for *Nyceryx mielkei* different from that for *Orecta* spp.). — **Figs. 3–6:** *Orecta comus* sp. n. HT ♂ dorsal (**3a**), ventral (**3b**); PT ♀ dorsal (**4a**), ventral (**4b**); PT ♂ dorsal (**5a**), ventral (**5b**); PT ♂ dorsal (**6a**), ventral (**6b**). — **Figs. 7–8:** *Orecta lycidas lycidas*. ♂ dorsal (**7a**), ventral (**7b**); ♀ dorsal (**8a**), ventral (**8b**). — Scale bars for all *Orecta* specimens: 1 cm. — **♂ genitalia** (without scale bar). — **Figs. 9–10:** *Orecta comus* sp. n., PT ventral view, GP JH #500 (**9**); HT (GP JH #513) valve (**10**). — **Figs. 11–12:** *Orecta lycidas lycidas*, ventral view, GP JH #501 (**11**); valve, GP JH #514 (**12**).

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